S7 operation update

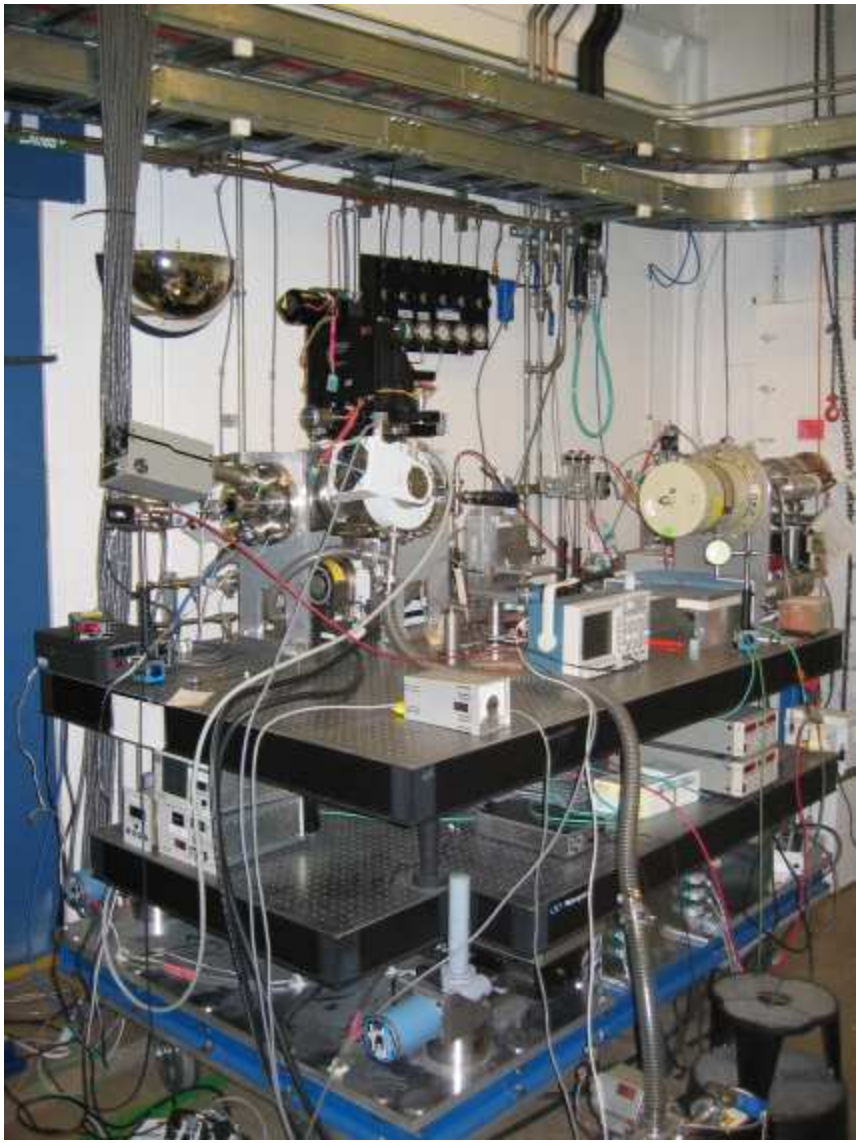
Eric Dufresne, TRR group meeting, April. 25, 2008

- Work on the new chemical exhaust system for hazardous gases was completed in time to do an experiment in 7ID-B. An AMO experiment in 7ID-B was performed during the week of February 20 using the system with toxic gases. Everything worked well. A significant amount of work remains to complete the system in all the hutches.(slide 3)
- A hand rail was installed on top of all the 7ID hutches to make it compliant with safety regulations. This was done in March during shutdowns.
- On March 6, 2008, the Sector 7 operation was reviewed for its safety practices. The review went very well. A new XOR 7 Safety Plan was approved by AES following the review. All safety issues found in recent ES&H walkthroughs have been resolved. (New safety assignments on slide 4)
- We upgraded our laser oscillator in March with a system capable of locking the laser to an external RF source with a 250 fs jitter. The laser installation and operation didn't work as well as anticipated. The laser has been sent back to Coherent for optimization and is expected back on June 1.
- Dohn Arms commissioned the Dysplex cryostat in 7ID-C with a laser-pump x-ray probe experiment using a clear plastic dome. The experiment went well and identified some small issues to improve upon. Single crystal reflections were notably broadened by vibrations of the cryostat.
- An optical engineer from LCLS, Sasha Gilevich, and EL are designing a new laser beam delivery system for 7ID users. Design work is nearly complete.
- EL is also designing a new laser transport system to deliver laser beam from 7ID-E to 7ID-C while being able to access 7ID-D when X-rays are present in 7ID-C only.

S7 R&D (cont.)

- Several papers were published since the last sector 7 update (2 APL, one J.Chem. Phys., one surface diffraction).
- On February 15, 2008, Jin Wang and Ali Nassiri organized a workshop on the Picosecond source. The workshop was well attended, and the community decided to support the development of a superconducting RF crab cavity system. A workshop on May 9 will discuss the scientific opportunities of a ps source with a broader community of potential users.
- We are also pleased to annouce that Dr. Mathieu Chollet joined XOR7 as postdoctoral fellow working on the streak camera development with Bernhard Adams. Mathieu was at the PF-AR ring in Japan where he did his PhD.

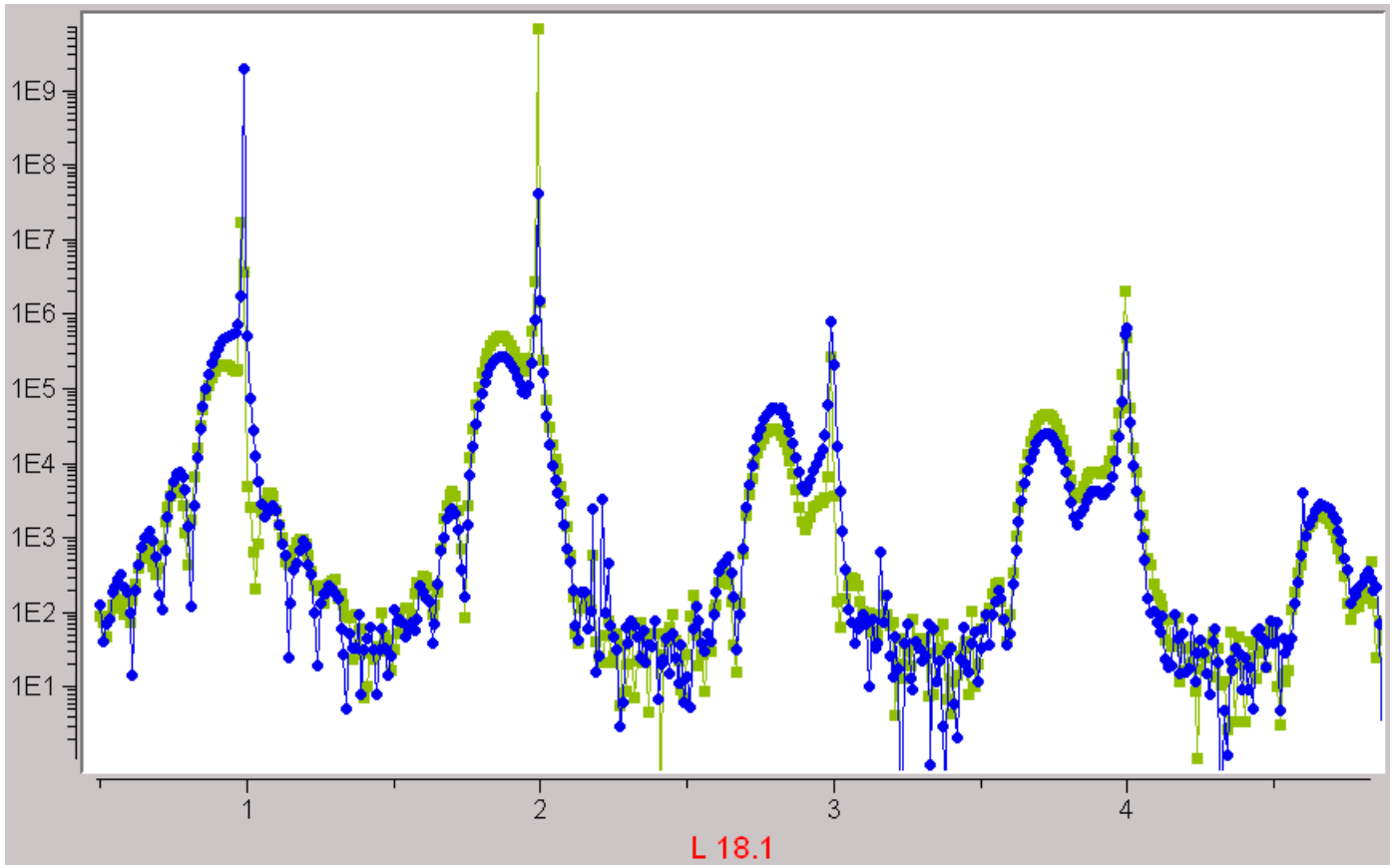
New exhaust in 7ID-B and experiment



New XOR7 Safety assignments

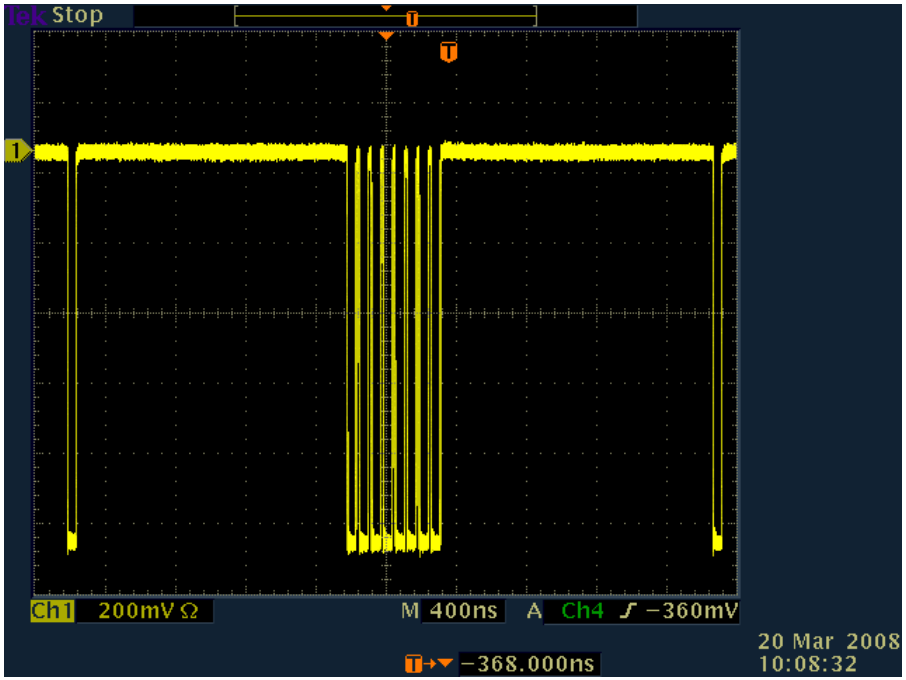
Assignment	**Person assigned/ alternate person**
XSD Division Director	Gabrielle Long
XOR Director	George Srajer
TRR Group Leader	Jin Wang
XSD ES&H Coordinator	Paul Rossi
Sector 7 Coordinator	Eric Dufresne/ Jin Wang
Sector 7 Safety Coordinator	Dohn Arms / Don Walko
Sector 7 Electrical Safety Coordinator	Dohn Arms / Eric Dufresne
Sector 7 Chemical Safety Coordinator	Harold Gibson / Eric Dufresne
Sector 7 Shipping Coordinator	Harold Gibson / Don Walko
Sector 7 Laser Control Area Supervisor	Eric Landahl
Sector 7 Hoist and Rigging Coordinator	Don Walko / Harold Gibson
Sector 7 Experiment Safety Reviewers and Approvers	Bernhard Adams, Dohn Arms, Don Walko, Eric Landahl, Eric Dufresne.
Sector 7 Sealed Source Custodian	Harold Gibson / Bernhard Adams
Sector 7 Machine Shop Coordinator	Harold Gibson / Dohn Arms
D020 Electrical Laboratory Safety Captain	Dohn Arms
D030 Wet Laboratory Safety Captain	Don Walko

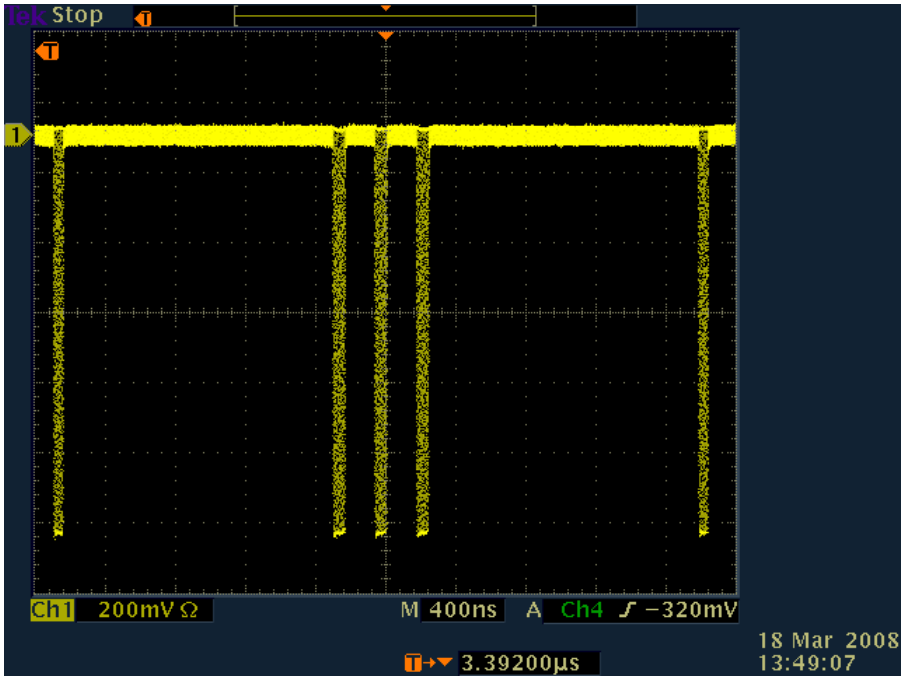
COBRA data with Pilatus



The sample is 10 unit cells of $BaTiO_3$ on $SrTiO_3$. Blue is the 33L rod; green is the 40L rod. The Pilatus improved the data collection significantly.

Test of a slightly modified hybrid bunch mode





Regular hybrid mode sextet

Reorganized hybrid mode

With the proposed change, 3 isolated long bunches can be used for ultrafast white-beam imaging with a duration of tens of nanoseconds.